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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/809,291	03/25/2004	Cynthia C. Bamdad	M1015.70002US01	6035

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EXAMINER	
COUNTS, GARY W	
ART UNIT	PAPER NUMBER
1641	
MAIL DATE	DELIVERY MODE
11/24/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/809,291	BAMDAD ET AL.	
	Examiner	Art Unit	
	GARY W. COUNTS	1641	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 October 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *217, 218, 220, 221, 223-235, 237, 238, 240, 241* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *217, 218, 220, 221, 223-235, 237, 238, 240, 241* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/02/09 has been entered. Currently, claims 217, 218, 220, 221, 223-235, 237, 238, 240 and 241 are pending and under examination.

Withdrawn Rejections

2. All rejections of claims not reiterated herein, have been withdrawn.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 217, 218, 220, 221, 223-235, 237, 238, 240, and 241 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 217 is vague and indefinite because it is unclear what relationships exists between the ligand, the target, the binding partner to the ligand, the colloidal particle, the non-colloidal structure and the candidate drug.. For example, the claim does not make clear if the binding partner to the ligand is the target or if the two are different. The claim does not make clear if a candidate drug is actually added to the assay or not and does not make clear if the candidate drug is the target or if the candidate drug binds the ligand or binds the target. The claim as recited does not make clear the relationships of the different components of the assay. Further, the preamble of the claim only recites a method for immobilizing a particle to a colloidal structure whereas the body of the claim recites "interruption of binding of the ligand to the target indicates the presence of the candidate drug". Therefore, it is also unclear what the intended purpose or outcome of the method is or what Applicant is trying to encompass. Method claims should clearly set forth the various method steps in a positive, sequential manner using active tense verbs such as mixing, reacting, binding, and detecting. Method claims should also clearly state each component used in the method and the relationship of the various components, and should not be a mere cataloging of parts. The claims should also conclude with a step relating the method result to the purpose of the method, preferably to the purpose as also set forth in the preamble of the claim. See also deficiencies found with the relationships of the components recited in claims 228 in relation to claim 225 from which it depends and also the relationships of the components in claim 233.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

6. Claims 225-227, 230 and 231 are rejected under 35 U.S.C. 102(e) as being anticipated by Bamdad et al (US 6,541,617).

Bamdad et al disclose method for immobilizing a colloid particle to a non-colloidal structure. Bamdad et al disclose a transport particle (5) comprising a linker (60) and a binding ligand (55) (e.g. Fig 1C, col 2 - col 3). Bamdad et al disclose that the transport particle can be colloidal (col 37). Bamdad et al disclose an electrode (non-colloidal structure (85) comprising a linker (60) and a binding ligand (65) (e.g. Fig 1C). Bamdad et al disclose the ligand (65) of the

non-colloidal structure binds to the ligand (55) of the colloidal transport particle to immobilize the colloidal particle to the non-colloidal structure. Bamdad et al disclose that the colloidal transport particle can comprise a fluorescent label (signaling entity) (col 41). Bamdad et al discloses the detection complexes comprising the colloidal particle bound to the non-colloidal structure. Bamdad et al disclose the particle can comprise self-assembled monolayers (SAM) (e.g. col 2) (It is noted that in the Remarks section of the amendment filed 12/13/07 applicant directed Examiner's attention to paragraph 91 in the patent application publication number US 2005/0148101 for support for the term "non-adsorbent surface", a review of which indicates that SAM's resist nonspecific adsorption without protein blocking steps). Thus, Bamdad teaches a non-adsorbent surface. Bamdad et al also discloses that the electrode can comprise SAM's (e.g. col 9-10 and that the electrodes can be chips)(e.g. col 10).

With respect to the recitation "non-covalently linked to the non-colloidal structure via the agent and the binding partner (as recited in claim 233). Bamdad et al disclose the same agent and binding partner (antigen/antibody) (e.g. col 27) as currently disclose on pages 8-9 of the instant application. Therefore, it is inherent that the particle would be non-covalently linked to the non-colloidal structure.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 217, 218, 223, 225-228, 230, 231, 233-235 and 240 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bamdad et al (US 6,541,617) in view of Charych et al (US 6,001,556).

Bamdad et al disclose method for immobilizing a colloid particle to a non-colloidal structure. Bamdad et al disclose a transport particle (5) comprising a

linker (60) and a binding ligand (55) (e.g. Fig 1C, col 2 - col 3). Bamdad et al disclose that the transport particle can be colloidal (col 37). Bamdad et al disclose an electrode (non-colloidal structure (85) comprising a linker (60) and a binding ligand (65) (e.g. Fig 1C). Bamdad et al disclose the ligand (65) of the non-colloidal structure binds to the ligand (55) of the colloidal transport particle to immobilize the colloidal particle to the non-colloidal structure. Bamdad et al disclose that the colloidal transport particle can comprise a fluorescent label (signaling entity) (col 41). Bamdad et al discloses the detection complexes comprising the colloidal particle bound to the non-colloidal structure. Bamdad et al disclose the particle can comprise self-assembled monolayers (SAM) (e.g. col 2) (It is noted that in the Remarks section of the amendment filed 12/13/07 applicant directed Examiner's attention to paragraph 91 in the patent application publication number US 2005/0148101 for support for the term "non-adsorbent surface", a review of which indicates that SAM's resist nonspecific adsorption without protein blocking steps). Thus, Bamdad teaches a non-adsorbent surface. Bamdad et al also discloses that the electrode can comprise SAM's (e.g. col 9-10 and that the electrodes can be chips)(e.g. col 10).

Bamdad et al differ from the instant invention in failing to teach allowing the colloidal particle the ability to fasten to the non-colloidal structure in the presence of a candidate drug for interruption of the binding of the ligand.

Charych et al disclose a competitive assay in which a drug candidate is introduced into a system containing a receptor and its reciprocal binding partner. Charych et al disclose that if the drug binds to the receptor or modifies the

binding partner's binding capacity, there is a decrease in the signal (col 20, lines 1-40). Charych et al disclose that this provides for the development and improvement of drugs by observing competitive inhibition of natural binding events between all surfaces or binding sites and their natural bioactive ligand.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate candidate drugs and their reagents as taught by Charych et al into the method of Bamdad et al because Charych et al shows that this provides for the development and improvement of drugs by observing competitive inhibition of natural binding events between all surfaces or binding sites and their natural bioactive ligand. Also, with respect to the recitation "allowing the colloidal particle the ability to fasten to the non-colloidal structure in the presence of a candidate drug". Since Bamdad et al provides the same binding partners as currently recited, the binding partner of Bamdad et al would have the ability to fasten to the non-colloidal structure in the presence of a candidate drug.

Further, the recitation "for interruption of binding of the ligand to a target" is a recitation of intended use and does not provide any positive active method steps. The examiner notes that such statements are directed to the intended use of the claimed invention. Applicant is reminded that a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art. If the prior art is capable of performing the intended use then it meets the claim. In the instant case, Bamdad et al teaches the same components and structures as currently recited and thus would have

the ability to fasten to the non-colloidal structure in the presence of a candidate drug. Nevertheless, as shown above it would have been obvious to one of ordinary skill in the art to incorporate candidate drugs and their reagents as taught by Charych et al into the method of Bamdad et al because Charych et al shows that that this provides for the development and improvement of drugs by observing competitive inhibition of natural binding events between all surfaces or binding sites and their natural bioactive ligand. Further, it is unclear what relationships exists between the components recited and it is unclear what Applicant is trying to encompass (see 112 2nd rejections above). Thus, for the reasons stated above the combination of Bamdad et al and Charych et al reads on the instantly recited claims.

11. Claims 220, 229 and 237 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bamdad et al in view of Charych et al as applied to claims 217, 218, 223, 225-228, 230, 231, 233-235 and 240 above, and further in view of Altieri et al (US 6,346,389).

See above for the teachings of Bamdad et al and Charych et al.

Bamdad et al and Charych et al differ from the instant invention in failing to teach the binding partner is adapted for linkage to the particle by glutathione/glutathione-s-transferase ligand interaction.

Altieri et al disclose glutathione-s-transferase fusion proteins which are immobilized onto a glutathione substrate. Altieri et al disclose that this immobilization allows for the separation of protein-protein complexes from

uncomplexed forms, as well as to accommodate automation of an assay (col 10, lines 9-36).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate glutathione-s-transferase fusion proteins and glutathione substrates as taught by Altieri et al into the modified method of Bamdad et al because Altieri et al teaches that this immobilization allows for the separation of protein-protein complexes from uncomplexed forms, as well as to accommodate automation of an assay.

12. Claim 221 and 238 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bamdad et al in view of Charych et al as applied to claims 217, 218, 223, 225-228, 230, 231, 233-235 and 240 above, and further in view of Zeytinoglu et al (US 6,080,539).

See above for the teachings of Bamdad et al and Charych et al.

Bamdad et al and Charych et al differ from the instant invention in failing to teach the non-colloidal structure is a cell or tissue section.

Zeytinoglu teaches a method of detecting antigens in which an antibody is brought into contact with the body component in situ, and the resulting antibody/antigen complex is then detected either in situ or ex situ (col 2, lines 65 – col 3, line 2). A retainer is applied to a body part such as the skin or mucous membrane of a patient, and one or more fist step antibodies are brought into contact with the body part within the confines of the retainer. Antibody/antigen complex is then amplified to an appropriate level, and a second step antibody is

brought into contact with the complex to render the complex macroscopically detectable (col 3, lines 3-12).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to detect antigens in situ on cell or body tissue as taught by Zeytinoglu using the modified method and reagents of Bamdad et al because both teach using colloidal particles as a signal label for detecting a target analyte. One of ordinary skill would combine these references so that antigen on cells and or body tissue can be detected directly without taking biopsies and using biotin/streptavidin to amplify signal or to secure the binding of the antibody or the label to the complex being detected.

13. Claim 224, 232, and 241 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bamdad et al in view Charych et al as applied to claims 217, 218, 223, 225-228, 230, 231, 233-235 and 240 above, and further of Virtanen et al (US 6,342,349).

See above for the teachings of Bamdad et al and Charych et al.

Bamdad et al and Charych et al differs from the instant invention in failing to teach exposing the colloid particle and the non-colloidal structure to a substrate for an enzyme adapted for linkage to the non-colloidal structure, a molecule species linkable to the substrate via enzyme activity adapted for linkage to the particle, and an enzyme for the substrate.

Virtanen et al disclose an immunoassay method comprising colloid particles (col 37, lines 40-42), which are immobilized to a substrate (non-colloidal

structure). Virtanen et al disclose that the colloid particle and the substrate (non-colloidal structure) are exposed to cleavable spacer molecules (entity), which comprise cleavage sites. (see figures 1 and 3). Virtanen et al disclose that the cleavable spacer molecules bind to both the colloid particle and to the non-colloidal structure. Virtanen et al disclose that enzymes can be used as cleavage reagents by incorporating into the spacer a moiety that serves as the substrate (enzyme substrate) for the given enzyme (col 34, lines 15-17). Virtanen et al disclose that the analyte can be a drug candidate (col 55, line 53 – col 56, line 67). Virtanen et al disclose that the cleavable spacer molecules also comprise antibodies specific for the analyte of interest. Virtanen et al disclose that when the analyte (drug candidate) is present it binds to the antibody and prevents the chemical cleaving agent (enzyme) from cleaving the colloid particle from the surface (col 18, lines 1-16). Virtanen et al disclose that the presence and absence of the colloid particle may then be detected. Virtanen et al teaches that such cleavable signal embodiments provide advantages for immunoassays and provides for both fast and sensitive detection (col 19).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate substrates, enzymes and molecular species such as taught by Virtanen et al into the modified method of Bamdad et al because Virtanen et al teaches that it is known in the art to use such reagents for determining the bound state of non-colloidal structure to a colloidal particle and also teaches that such embodiments provides advantages for immunoassays and provides for both fast and sensitive detection (col 19).

Response to Arguments

14. Applicant's arguments filed 10/02/09 have been fully considered but they are not persuasive.

102(e) rejection over Bamdad (US 6,541,617)

Applicant argues that independent claims 217 and 233 have been amended with the language of claims 219 and 236 and according amended claims 217 and 233 should be patentable. This is not found persuasive because of the new 103 rejections above. Further, with respect to independent claim 225 and dependent claims 226, 227, 230 and 231. The Applicant did not amend claim 225 and therefore, the rejections of claims 225-227, 230 and 231 over Bamdad 102(e) have been maintained.

103 rejection over Bamdad in view of Charych

Applicant argues that the office did not reject claims 222, 225 and 239, over the Bamdad and Charych references. This is not found persuasive because the Examiner did rejection claims 222, 225 and 239 over Bambad (see previous office action of 10/02/08). Applicant further argues that the Applicant has amended independent claims 217 and 233 with the language of claims 222 and 239 which overcome the rejections of 219 and 236. This is not found persuasive because of reasons stated above the Bamdad et al in view of Charych et al read on the instantly recited claims.

103 rejections of the remaining secondary references of Altieri, Zeytinoglu and Virtanen

Applicant's remaining arguments are all based on the same argument that Applicant amended independent claims 217 and 233 with the language of claims 222 and 239 which overcome the rejections of 219 and 236. As stated supra the amendments to claims 217 and 239 are rejected on the combination of Bamdad et al in view of Charych et al and the combination with Altieri, Zeytinoglu and Virtanen. The combination of references read on the instantly recited claims (see rejections supra).

Conclusion

15. No claims are allowed.

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Samelson et al (US 2007/0134749) discloses drug screening assays wherein suspect drug candidates are introduced into a system to block the binding between receptors and ligands (e.g. para. 0197).

Fowlkes et al (US 2005/0069951) discloses the generation of drug leads and teaches methods for screening involving labeled ligands and looking for compounds that inhibit the binding of the labeled ligands to immobilized receptors (p. 43 para' 0547).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GARY W. COUNTS whose telephone number is (571)272-0817. The examiner can normally be reached on M-F 8:00 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Shibuya can be reached on (571) 272-0806. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ Gary W. Counts/
Examiner, Art Unit 1641

/Melanie Yu/
Primary Examiner, Art Unit 1641